

DOCKET FILE COPY ORIGINAL

Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554

RECEIVED

JUL 20 2000

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

In the Matter of )

Amendment of Part 101 of the )  
Commission's Rules to Streamline )  
Processing of Microwave Applications in )  
the Wireless Telecommunications Services )

WT Docket No. 00-19

Telecommunications Industry Association )  
Petition for Rulemaking )

RM-9418

To: The Commission

COMMENTS

ALCATEL USA, INC.

Robert J. Miller  
Gardere & Wynne, L.L.P.  
1601 Elm Street, Suite 3000  
Dallas, Texas 75201  
(214) 999-3000  
Its Attorney

July 19, 2000

No. of Copies rec'd 014  
List A B C D E

## TABLE OF CONTENTS

SUMMARY .....	i
ADOPTION OF THE PROPOSED 23 GHz BAND FREQUENCY PLAN AND ASSOCIATED TECHNICAL STANDARDS IS IN THE PUBLIC INTEREST .....	5
A.    23 GHz Band Channel Plan .....	8
1.    The Overall New Channel Plan Meets the Needs of FS Users .....	8
2.    23 GHz Band Use for Video Surveillance Systems .....	10
B.    Operating Criteria .....	11
1.    Frequency Tolerance. ....	12
2.    Spectrum Efficiency. ....	14
3.    Low Power Operation. ....	15
THE COMMISSION MUST ADOPT THE PROPOSED 23 GHz BAND AND 10 GHz BAND ANTENNA STANDARD MODIFICATIONS .....	16
A.    Smaller Antennas Are Appropriate. ....	17
B.    Permitting Smaller Antennas Will Serve the Public Interest .....	18
23 GHz BAND CONDITIONAL LICENSING MUST BE PROMOTED .....	19
A.    The Commission Should Permit Conditional Licensing for the Entire 23 GHz Band Using the TIA Fixed Section's Coordination Approach. ....	20
B.    Until Blanket 23 GHz Band Conditional Licensing Is Permitted, It Should Be Allowed On All Frequencies If the ERP Is Not Above 55 dBm. ....	23
LMDS TECHNICAL RULES MUST BE REVISED .....	26
A.    Alcatel's Proposal Regarding Out-of-Band Emission Measurements Must Be Adopted. ....	26
B.    LMDS Transmitters Must Be Subject To Verification. ....	29
FS SPECTRUM SHOULD NOT BE AUCTIONED .....	30

ADOPTION OF PROPOSED RULES FOR 10 GHz BAND OPERATIONS AND PART 74 DIGITAL TRANSMISSIONS ALSO WOULD SERVE THE PUBLIC INTEREST . . . . .	31
A.    The EIRP for the 10.60-10.68 GHz Band Should Be Modified . . . . .	32
B.    The Commission Promptly Should Initiate A Rulemaking to Revise Part 74. . . . .	34
CONCLUSION . . . . .	35

## SUMMARY

Emerging wireless technologies and essential public services depend upon fixed point-to-point terrestrial microwave radio service ("FS") operations. To support these operations, Alcatel USA, Inc. ("Alcatel") urges the Commission to take the following actions in the captioned Memorandum Opinion and Order and Notice of Proposed Rule

### Making:

- Adopt the proposed 23 GHz Band (i.e., 21.2-23.6 GHz band) wideband and narrowband channelization.
- Adopt the proposed 23 GHz Band 1 bps/Hz spectrum efficiency plan, 0.001% frequency tolerance standard, and low-power limited coverage rules.
- Adopt standards permitting smaller diameter 23 GHz Band and 10 GHz Band (i.e., 10.55-10.68 GHz band) antennas.
- Change course and aggressively pursue an agreement with the National Telecommunications and Information Administration ("NTIA") to permit blanket 23 GHz Band conditional licensing.
- Update the Local Multipoint Distribution System ("LMDS") rules to relax measurement requirements for digital radio out-of-band emissions (based upon Alcatel's recent letter ruling request) and to allow equipment self-verification.
- Pursue options other than auctions for FS bands to meet the Balanced Budget Act of 1997 mandate to reform the licensing process.
- Revise maximum 10 GHz Band EIRP to avoid problems with longer paths subject to rain outage.
- Initiate a rulemaking to establish rules for digital STL operations in support of HDTV deployment.

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554**

In the Matter of	)	
	)	
Amendment of Part 101 of the	)	WT Docket No. 00-19
Commission's Rules to Streamline	)	
Processing of Microwave Applications in	)	
the Wireless Telecommunications Services	)	
	)	
Telecommunications Industry Association	)	
Petition for Rulemaking	)	RM-9418
	)	

To: The Commission

**COMMENTS**

In the above-captioned Memorandum Opinion and Order and Notice of Proposed Rule Making, 15 FCC Rcd 3129 (2000) ("NPRM"), the Commission continues its efforts to complete the Part 101 rules governing fixed point-to-point terrestrial microwave radio services ("FS"). In addition to making decisions on various Petitions for Reconsideration of its Report and Order establishing Part 101,<sup>1</sup> the Commission

---

<sup>1</sup>Reorganization and Revision of Parts 1, 2, 21, and 94 of the Rules to Establish a New Part 101 Governing Terrestrial Microwave Fixed Radio Services, Report and Order, WT Docket No. 94-148, 11 FCC Rcd 13449 (1996) ("Part 101 Order").

proposes further changes to those rules in the NPRM,<sup>2</sup> particularly for the 21.2-23.6 GHz band ("23 GHz Band").

Prompt action on the NPRM is in the public interest. Public safety and utility services depend upon the unfettered availability of reliable FS. Emerging broadband wireless technologies have made FS the backbone of their network infrastructure.

In the NPRM, the Commission makes several proposals to help the FS industry meet these critical needs. Users would have sufficient spectrum so they can continue providing such services and so they can expand to accommodate growing demand. Manufacturers would have uniform channelization and technical standards to ensure spectrally efficient, economical, and state-of-the-art equipment.

---

<sup>2</sup>These rules initially were proposed in a Petition for Rulemaking (RM-9418) ("Petition") filed by the Fixed Point-to-Point Communications Section, Wireless Telecommunications Division, Telecommunications Industry Association (the "TIA Fixed Section"). The Telecommunications Industry Association ("TIA") is the principal industry association representing all telecommunications equipment manufacturers, including manufacturers of FS equipment. Members of the TIA Fixed Section serve, among others, companies, including telephone carriers, utilities, railroads, state and local governments, and cellular carriers, licensed by the Commission to use private and common carrier bands for provision of important and essential telecommunications services. Sometimes, a product-oriented division or a section of such a division within TIA will file in a proceeding expressing the views of only the members of that division or section. The TIA Fixed Section joined with the National Spectrum Managers Association ("NSMA") to prepare and file the Petition for Rulemaking that led to the adoption of Part 101.

Pursuant to Section 1.415 of the Commission's Rules,<sup>3</sup> Alcatel USA, Inc. ("Alcatel"),<sup>4</sup> by its attorney, hereby urges action on the Commission's proposals<sup>5</sup> as set forth below:

- 23 GHz Band frequency plan -- Supports adoption of the proposed 23 GHz Band frequency plan.
- 23 GHz Band operating criteria -- Supports adoption of the proposed 1 bps/Hz spectrum efficiency plan, 0.001% frequency tolerance standard, and low-power limited coverage rules for the 23 GHz Band; and recommends revising the footnote for the proposed changes to the frequency tolerance requirements in Section 101.107(a) so they apply equally to common carrier and private carrier FS licensees.
- 23 GHz Band duplex video surveillance systems -- Recommends that 23 GHz Band digital duplex (*i.e.*, two (2) RF channels) video surveillance systems must be required to meet the Section 101.141(a) 1 bps/Hz spectrum efficiency rules, but that analog systems should be required to use a licensed video channel with necessary bandwidth instead of always using a 50 MHz channel.
- Antenna standards -- Supports adoption of the proposed antenna standards so 1-foot antennas could be used in the 23 GHz Band and 2-foot antennas could be used in the 10.55-10.68 GHz band ("10 GHz Band").
- 23 GHz Band conditional licensing -- Disagrees with the Commission and supports 23 GHz Band conditional licensing. The Commission and the National Telecommunications Information Administration ("NTIA") must accelerate their negotiations to achieve appropriate coordination

---

<sup>3</sup>47 C.F.R. §1.415 (2000).

<sup>4</sup>Alcatel is a wholly-owned subsidiary of Alcatel, N.V., one of the world's largest corporations and the world's largest manufacturer and supplier of telecommunications equipment, including FS radios. Alcatel's equipment is used for a wide range of services, including short, medium and long-haul voice, video and data transmission. Its customers include all the Bell Operating Companies, most major independent telephone companies, cellular operators, power and other utility companies, oil companies, railroads, industrial companies, and state and local government agencies.

<sup>5</sup>The NPRM was published in the Federal Register on June 20, 2000. 65 FR 38333 (June 20, 2000).

procedures so 23 GHz Band conditional licensing could be implemented. However, if the Commission decides not to permit blanket 23 GHz Band conditional licensing, then, at a minimum, such licensing should be permissible for all operations in that band that do not exceed a 55 dBm effective radiated power ("ERP").

- LMDS technical rules -- Supports adoption of the suggested changes to the Part 101 Local Multipoint Distribution Service ("LMDS") requirements detailed in its April 12, 2000, letter to the Chief, Public Safety and Private Wireless Division, Wireless Telecommunications Bureau ("WTB"), a copy of which is attached hereto. In this letter ruling request, Alcatel sought a WTB determination that the 1 MHz bandwidth used to measure out-of-band emissions for digital radios under Section 101.111(a)(2)(ii) of the Commission's rules (including those used in the LMDS) is not required to include any of the authorized channel bandwidth being tested. This interpretation, as detailed herein, would promote increased FS frequency availability by optimizing spectrum efficiency, facilitating product development and preserving adequate safeguards against harmful interference to protected operations. In addition, Alcatel supports the Commission's proposal to manufacturer verification of LMDS radios. This change is appropriate because it would accelerate product roll-out without compromising interference protection safeguards.
- 10 GHz Band EIRP -- Recommends revising the proposed maximum allowable equivalent isotropically radiated power ("EIRP") for the 10 GHz Band to avoid problems with longer paths (relocated from the 2 GHz band) which otherwise are affected by rain outage.
- Spectrum auctions -- Opposes auctioning FS frequencies because it is an inappropriate method for authorizing systems consisting of one or more RF links, for authorizing individual links to complete existing systems, and for authorizing systems in shared bands (i.e., FS and satellite).
- Part 74 FS digital standards -- Strongly encourages the Commission to expedite action on adopting rules for digital transmissions over Part 74 broadcast FS facilities to support High Definition TV ("HDTV") development.



**ADOPTION OF THE PROPOSED  
23 GHz BAND FREQUENCY PLAN  
AND ASSOCIATED TECHNICAL STANDARDS  
IS IN THE PUBLIC INTEREST**

When it adopted Part 101, the Commission declared that the public would benefit from its streamlining and consolidating the rules, reducing regulatory burdens, encouraging more efficient spectrum usage, and promoting uniform radio standards across different frequency bands to optimize economies of scale for manufacturers.<sup>6</sup> However, achieving these objectives still is a work in progress. The TIA Fixed Section's proposals in the Petition address these unfulfilled goals by encouraging better use of the 23 GHz Band,<sup>7</sup> suggesting improvements for FS use of the 10 GHz Band, and facilitating adoption of rules for broadcast operation so that the promise of HDTV can be realized.

The 23 GHz Band is especially attractive for FS users because it is suitable for the medium or high-capacity, short range systems which serve as an essential backbone to evolving broadband technologies.<sup>8</sup> It also is a viable alternative to the 6 GHz, 11 GHz, and 18 GHz bands for FS users. Therefore, in its Petition, the TIA Fixed Section made several proposals to facilitate access to the 23 GHz Band, including a formal frequency plan and various revisions to technical standards.

---

<sup>6</sup>Part 101 Order, 11 FCC Rcd at 13452-53.

<sup>7</sup>The 23 GHz Band is shared by federal government and non-governmental entities and is allocated for FS use.

<sup>8</sup>Petition at 2.

While improving FS access to the 23 GHz Band was the TIA Fixed Section's main focus in the Petition, it also proposed revisions to the 10 GHz Band and to Part 74 for auxiliary broadcast operations. For the 10 GHz Band, the TIA Fixed Section suggested reducing the minimum antenna diameter to more closely correspond with user needs in providing long-haul wireless paths. If HDTV is to emerge successfully, digital microwave studio-to-transmitter ("STL") links must be available, necessitating the Part 74 rule proposals made in the Petition.

It is well-established that FS networks are essential to support the national telecommunications infrastructure.<sup>9</sup> The FS support emerging wireless technologies and critical public services. Health and safety providers, local exchange carriers, cellular telephone companies, utilities, railroads, petroleum companies, financial institutions, and federal, state and local governments all rely upon FS networks to support their operations.

Microwave is used as the backbone infrastructure for cellular, PCS, and other CMRS providers, which are expanding rapidly. Microwave spectrum may also be used for fixed point-to-multipoint service backbone support, such as for LMDS.<sup>10</sup>

---

<sup>9</sup>Amendment of the Commission's Rules Regarding the 37.0-38.6 GHz and 38.6-40.0 GHz Bands, Report and Order and Second Notice of Proposed Rule Making, 12 FCC Rcd 18600, 18607 (1997).

<sup>10</sup>NPRM, 15 FCC Rcd at 3166. In particular, FS are used for: (1) cellular and PCS cell interconnects to MTSOs and to the PSTN; (2) carriage of wireless traffic in a campus environment or in industrial clusters for business, educational, and public safety needs; (3) controlling long-haul pipeline transmissions; (4) local distribution networks to bypass LECs and increase local telephone competition; (5) remote monitoring and control of utility operations; (6) transport infrastructure for LMDS links; (7) public safety operations (e.g., medical information service); and (8) broadcast auxiliary operations, including HDTV services. Petition at 6-8.

The FS is the medium of choice to support these services because it is the most reliable, cost-effective, flexible, and terrain-insensitive technology available. However, FS users need additional spectrum to continue providing such support. The Commission, in the NPRM, recognizes this need by stating that the "lower frequency bands are significantly encumbered, particularly in urban areas, and the relocation of 2 GHz microwave licenses into the 6 GHz and 11 GHz bands has further burdened this spectrum."<sup>11</sup> With its ability to accommodate the needs of medium-capacity and high-capacity short-haul FS systems, the 23 GHz Band is a very attractive candidate for such expansion.

Even though the 23 GHz Band offers significant potential for FS users, its availability has been restricted significantly. Excessive delay in the coordination and application process associated with government sharing, outmoded channel plans, and inappropriate operating criteria, have made this band unattractive for FS users. The proposals made in NPRM, as modified herein, will eliminate these unnecessary barriers to entry.<sup>12</sup>

---

<sup>11</sup>NPRM, 15 FCC Rcd at 3166.

<sup>12</sup>In the Part 101 Order, the Commission established Section 101.4, which sets forth a transition plan whereby FS licenses in effect as of July 31, 1996, could continue operating under Part 21 or Part 94 after Part 101 became effective. Part 101 Order, 11 FCC Rcd at 13477-78. This "grandfathering" provision appropriately has been clarified in the NPRM to be effective "indefinitely." NPRM, 15 FCC Rcd at 3147. Similarly, for the proposed changes to the 23 GHz Band, the TIA Fixed Section recognized the need to minimize any adverse impact that the new rules would have on licensees of existing systems and on equipment manufacturers once they do become effective. Thus, it proposed that the Commission establish an 18-month transition period before manufacturers would be required to meet applicable new frequency tolerance, spectrum efficiency, or other standards. Petition at 16 n.23. In addition, the TIA Fixed Section proposed that, within 24 months after the new rules become effective, users would be required to meet those technical requirements for new

## A. 23 GHz Band Channel Plan

In its Petition, the TIA Fixed Section proposed a 50 MHz channel plan.<sup>13</sup> This plan would fill a vacuum because the 23 GHz Band is not channelized in the Commission's Rules. It would make wideband and narrowband channels in the 23 GHz Band available to provide optimal flexibility and efficiency. The Commission, in the NPRM, agrees that this plan is needed and proposes its adoption.<sup>14</sup>

### 1. The Overall New Channel Plan Meets the Needs of FS Users.

Currently, there is no 23 GHz Band channel plan. Absent such a necessary blueprint for operations in this band, industry has developed a 50 MHz channel plan.<sup>15</sup> However, this 23 GHz Band channel plan must be incorporated into the Commission's rules for maximum impact.

[The] TIA [Fixed Section's proposed] plan will make the [23 GHz Band] more efficient, and thus more attractive for short-haul [FS] users. [The] proposed plan, as a general matter, is based upon the current industry standard 50 MHz channel plan, but, given the availability of more spectrally efficient digital fixed microwave service radios, it also

---

installations. Id. The proposed new antenna standards would be effective when the new rules become effective. Id. Under this 24-month transition procedure, FS stations applied for or licensed by the end of the transition period would be grandfathered indefinitely under the current rules, provided that these systems do not cause harmful interference to other licensees. The Commission proposes adoption of this transition procedure. NPRM, 15 FCC Rcd at 3160 n.191. To ensure a smooth transition for FS users and for FS equipment manufacturers, Alcatel supports this approach.

<sup>13</sup>Petition at 16.

<sup>14</sup>NPRM, 15 FCC Rcd at 3161.

<sup>15</sup>Petition at 16-18.

includes narrow and wideband channels to provide flexibility and to increase the number of potential users.<sup>16</sup>

Alcatel supports adoption of the channel plan, as reflected in the proposed revisions to Section 101.147(s).<sup>17</sup> The record of this proceeding clearly indicates that significant additional "user friendly" FS spectrum is needed and that this channel plan would go a long way to meeting this objective.<sup>18</sup>

Having flexible channel plans to make the 23 GHz Band more attractive for the short-haul, high capacity FS systems that comprise the backbone of an evolving national wireless infrastructure no longer can be deferred. These wireless communications networks need short-hop microwave links to interconnect with switching offices and the telephone network, to support the increased number of systems being used for wireless Internet access, and to ease the expansion of private microwave networks for voice and data transmission.

The proposed channel plan is a vital platform for meeting these consumer demands. A greater choice of wideband and narrowband channels would become available. Such flexibility would attract a broad range of users to the band. Pressure for spectrum would be decreased in the lower FS bands (i.e., 6, 11, and 18 GHz

---

<sup>16</sup>NPRM, 15 FCC Rcd at 3160-61 (footnotes omitted).

<sup>17</sup>Id., 15 FCC Rcd at 3209-3220.

<sup>18</sup>See comments filed on the Petition by Digital Microwave Corporation ("DMC") at 1-2; Harris Corporation - Microwave Division ("Harris") at 1-2; AirTouch Communications, Inc. ("AirTouch") at 4; Andrew Corporation at 2-3; Teledesic LLC at 1-3.

bands) so that they would have adequate capacity to meet demand by essential satellite and other carriers.

A seamless transition would occur because the proposed plan uses the existing standard 50 MHz channelization.<sup>19</sup> Maintenance of the 50 MHz channelization is important because it would allow users of existing 50 MHz radios to continue operating such equipment without disruption.

## 2. 23 GHz Band Use for Video Surveillance Systems.

In the NPRM, the Commission notes that, for surveillance security and other similar systems, it "routinely licenses duplex point-to-point private systems which use one channel for video and one channel for control where the control frequency is separated from the video frequency by 50 MHz,"<sup>20</sup> as set forth in Section

---

<sup>19</sup>A maximum authorized bandwidth of 100 MHz currently is specified for the 23 GHz Band. 47 C.F.R. § 101.147(s) (2000). To be consistent with the proposed 23 GHz Band frequency plan, which defines channels up to 50 MHz in bandwidth, the TIA Fixed Section proposed reducing the maximum bandwidth from 100 MHz to 50 MHz. Petition at 17 n.26. The maximum bandwidth in the 38.6-40.0 GHz band (the "38 GHz Band") is also 50 MHz. Establishing the same 50 MHz maximum bandwidth in the 23 GHz Band and in the 38 GHz Band would allow radio manufacturers to use common hardware in the two bands, thereby increasing economies of scale and reducing costs for the microwave operator. A search of the emission designators in the Commission's license data base did not identify any existing systems licensed for more than 50 MHz of bandwidth in the 23 GHz Band. Therefore, no grandfathering provision for 100 MHz bandwidth channels was included in the TIA Fixed Section's proposed revisions to Section 101.109(c).

<sup>20</sup>NPRM, 15 FCC Rcd at 3161.

101.147(s).<sup>21</sup> It inquires how these systems should be channelized under the proposed 23 GHz band plan.<sup>22</sup>

If the video surveillance system is digital, it should be required to meet the same 1 bps/Hz spectrum efficiency rule that the Commission proposes should be included in Section 101.141 for the entire 23 GHz Band.<sup>23</sup> However, if it is an analog system, the video channel should be licensed for the necessary bandwidth as defined in Part 2 of the Commission's rules instead of always using a 50 MHz channel. The control information could be carried on an FM subcarrier in the same channel. Alternatively, a second low capacity channel could be licensed for control functions. Otherwise, it would be a clear waste of limited spectrum to license a 50 MHz channel for control functions.

## **B. Operating Criteria**

While the proposed revisions to the 23 GHz Band channel plan, as demonstrated above, are needed to permit increased FS access, corollary, operational changes must be made to improve efficient use by these licensees. In the NPRM, the Commission proposes adoption of several TIA Fixed Section rule change recommendations

---

<sup>21</sup>It appears that the Commission incorrectly listed the maximum bandwidth as 50 kHz, instead of 50 MHz, in Appendix D, Section 101.109(c). Id., 15 FCC Rcd at 3203. This error must be corrected.

<sup>22</sup>Id., 15 FCC Rcd at 3161.

<sup>23</sup>Id., 15 FCC Rcd at 3162.

designed to achieve this objective. All these proposals are appropriate and must be included in Part 101.

1. Frequency Tolerance.

Under Section 101.107, the frequency tolerance specification for the 23 GHz Band is 0.03%. This specification assumes analog production and coordination based upon full 50 MHz channelization.<sup>24</sup>

However, the 0.03% frequency tolerance is outdated. Alcatel and most other FS radio manufacturers are licensing only digital radios in this band, which occupy at least 75% of the channel bandwidth. These radios only require a 0.001% frequency tolerance standard, as proposed by the TIA Fixed Section,<sup>25</sup> not the current relaxed 0.03% frequency tolerance protection standard. Instead, as the TIA Fixed Section correctly points out, retaining the existing standard is contrary to effective operation because, "for these digital radios, the 0.03% frequency tolerance specification would allow excessive frequency drift into adjacent channels if the band is divided into 50, 40, 30, 20, 10, 5 and 2.5 MHz channels, and that this would cause spectrum inefficiency."<sup>26</sup>

Tightening the frequency tolerance standard to 0.001% is also important because it would reduce consumer costs and increase manufacturer flexibility. The

---

<sup>24</sup>Petition at 18.

<sup>25</sup>Id., Appendix A at Section 5.

<sup>26</sup>NPRM, 15 FCC Rcd at 3161-62 (emphasis added).



0.001% frequency tolerance is used for other narrowband radio applications, particularly in the 18 GHz band.<sup>27</sup>

Most point-to-point microwave manufacturers design a family of radios for various frequency bands using common modulators, demodulators, IF components, and mechanical parts. One family of radios may cover the lower frequency bands from 2 to 11 GHz, using complex modulation techniques to meet the higher spectrum efficiency requirements and employing the advanced propagation countermeasures needed for long distance microwave paths. Another family may cover the higher microwave and millimeter wave bands used for short distance paths (e.g., 15, 18, 23, and 38 GHz). Typically, the only difference between products within a family is the RF components.<sup>28</sup>

Manufacturers of radios not meeting this criterion would be protected. Under the proposed transition rules, they would have 18 months to modify their product (licensees would have 2 years).<sup>29</sup> The Commission thus should adopt the TIA Fixed Section's proposal, as reflected in the NPRM.<sup>30</sup>

---

<sup>27</sup>Petition at 19.

<sup>28</sup>Id., Appendix A at Section 5.

<sup>29</sup>NPRM, 15 FCC Rcd at 3160 n.191. See footnote 12, supra.

<sup>30</sup>In the proposed rules (Appendix D), the Commission sets the frequency tolerance for the 19.7-27.5 GHz band at 0.001%. NPRM, 15 FCC Rcd at 3200-02. This frequency tolerance standard should apply to the 23 GHz Band. However, in footnote (4) to proposed Section 101.107, the Commission states that this tolerance applies to private users only (not common carriers). Id., 15 FCC Rcd at 3202. This footnote is currently in Part 101. In its Petition, the TIA Fixed Section proposed removing the footnote, since the maximum tolerance should apply to both common carriers and private users to avoid causing interference into adjacent narrowband channels. Petition at 18 n.27. The Commission's footnote should be changed to grandfather existing common carrier systems. The Commission includes such a grandfathering provision for 23 GHz Band Low Power Limited Coverage systems in Part 101.147(s)(8)(ii). NPRM, 15 FCC Rcd at 3220. It likewise should confer the same "grandfathered" status to common carriers throughout the entire 23 GHz Band.

## 2. Spectrum Efficiency.

The 23 GHz Band is without a spectrum efficiency requirement.<sup>31</sup> Given the anticipated use of this band, not having such a requirement presents a significant barrier against FS user access:

The TIA Fixed Section anticipates demand for very high bit rate applications in the 23 GHz band carrying up to 155 Megabits per second of data traffic. These systems will carry high speed Local Area Network traffic between buildings on a university or corporate campus, interconnect LMDS cell sites, or serve as microcell feeder links in a cellular or PCS network. These systems may be implemented using the 50 MHz channels in the proposed frequency plan. Radio equipment for these applications will require spectrum efficiencies from 1 to 3 bit/second per Hertz (e.g., using 16 QAM modulation).<sup>32</sup>

To cure this problem, the TIA Fixed Section proposed revising Section 101.141(a) to specify a 1 bps/Hz efficiency rate for the 23 GHz Band.<sup>33</sup> This proposed standard is also used for all frequency bands below 19.7 GHz and for DEMS operation in the 24 GHz (24.25-25.25 GHz) band.<sup>34</sup> Adoption of this standard thus is appropriate because it "would ensure that all proposed bandwidths are fully utilized

---

<sup>31</sup>Petition at 19.

<sup>32</sup>Id., Appendix A at Section 6.

<sup>33</sup>NPRM, 15 FCC Rcd at 3162.

<sup>34</sup>As discussed above, radios in the 18, 23, and 38 GHz bands use many common parts. Most manufacturers use 4-level frequency shift keying (4 FSK) or 4-level quadrature amplitude modulation (4 QAM) in their high frequency radio products. The radios are designed to meet the 1 bps/Hz spectrum efficiency requirement in the 18 GHz band. Radios using 4 QAM modulation will meet the spectrum efficiency requirement in the 23 GHz Band without modification. Radios using 4 FSK may be modified to meet the 1 bps/Hz efficiency rate by reducing the frequency deviation if they do not currently meet the requirement. Radios using 2 FSK or other simple modulation techniques may require more extensive equipment changes. The proposed rules include a transition period before the new standard is effective, providing manufacturers with time to make modifications to their equipment and users with the time to implement the new technology. See footnote 12, supra.

and because the digital 18 GHz band radio models that likely would be retrofitted for 23 GHz Band operation are designed to this standard."<sup>35</sup>

3. Low Power Operation.

Certain 23 GHz Band frequencies are set aside for lower power, limited coverage systems. These frequencies are severely congested.<sup>36</sup>

The TIA Fixed Section proposed designating an additional 200 MHz in the 23 GHz Band to relieve this problem.<sup>37</sup> The low power frequencies are used for surveillance and remote video monitoring. These applications must be provided adequate spectrum to ensure their continued vitality. Alcatel supports assignment of the extra 200 MHz for 23 GHz Band low power service.

Besides this additional 200 MHz of spectrum, the TIA Fixed Section proposed specific technical changes for low-power licensees operating in the 23 GHz Band. These changes include: (a) clarifying the maximum power standard from a 55 dBm ERP to a 55 dBm EIRP because EIRP (not ERP) is the appropriate measurement for fixed, rather than mobile, operations; (b) revising the frequency tolerance standard from 0.03% to 0.001% to ensure conformity for all shared services in the band; (c) deleting as outdated "special showings" if a license application requests a 50 MHz bandwidth channel or more than five (5) hops in tandem; (d) eliminating unique

---

<sup>35</sup>NPRM, 15 FCC Rcd at 3162.

<sup>36</sup>Petition at 20.

<sup>37</sup>Id.

interference protection criteria because the standard for 23 GHz Band full power operation is adequate; and (e) permitting a 1-foot diameter antenna throughout the band.<sup>38</sup>

The Commission proposes adoption of all these revisions.<sup>39</sup> Alcatel supports such action.

**THE COMMISSION MUST ADOPT THE PROPOSED 23 GHz BAND  
AND 10 GHz BAND ANTENNA STANDARD MODIFICATIONS**

Antenna size must be reduced to meet the needs of the PCS and other wireless users deploying systems nationwide:

Many FS users need to employ small antennas. For example, PCS operators plan to use FS to interconnect cell sites. The majority of these sites, however, are located on rooftops, monopoles, electrical transmission towers, and other structures that cannot support large microwave dishes. An increasing number of homeowner associations and zoning boards object to the diminished aesthetic value caused by the appearance of numerous cell sites in their neighborhoods. Therefore, in response to the concerns of its potential customers, PCS operators prefer to use small antennas.<sup>40</sup>

The TIA Fixed Section proposed that the Commission amend its rules to allow smaller antennas in the 23 GHz Band and in the 10 GHz Band. For the reasons set forth below, these proposals must be adopted.

For the 23 GHz Band, a 0.46 meter (18-inch) diameter for Category A antennas or a 0.30 meter (1-foot) diameter for Category B antennas would be permitted instead

---

<sup>38</sup>Id. at 21-22.

<sup>39</sup>NPRM, 15 FCC Rcd at 3162-63.

<sup>40</sup>Petition at 22.

of the current 0.61 meter (2-foot) minimum prescribed in Sections 101.115 and 101.147(s) of the Commission's rules.<sup>41</sup> Similarly, for the 10 GHz Band, a 0.61 (2-foot) diameter antenna, instead of the current minimum 1.22 meter (4-foot) diameter, would be permitted.<sup>42</sup> Furthermore, the TIA Fixed Section proposed changes to the minimum antenna gain, maximum beamwidth and front-to-back ratios for these smaller-diameter antennas in the 23 GHz Band and 10 GHz Band. Alcatel supports adoption of all the TIA Fixed Section proposals for reducing antenna size, as set forth in the NPRM.

**A. Smaller Antennas Are Appropriate.**

The proposed changes for the 23 GHz Band antenna standards, as the Commission acknowledges, "will accommodate ... an increased need for short (*i.e.*, one-to-two-miles) microcell interconnect and LMDS infrastructure link point-to-point microwave paths...."<sup>43</sup> Small diameter antennas further provide low profile, aesthetically pleasing installation that often is required in urban or campus systems

---

<sup>41</sup>NPRM, 15 FCC Rcd at 3164.

<sup>42</sup>Id., 15 FCC Rcd at 3164-65. The 10 GHz Band also is allocated for FS use. This band is suitable for medium or high capacity, short-haul FS systems, which are critical components of wireless networks. Point-to-point microwave is the preferred transmission medium when high reliability is required (*e.g.*, 911 service), when leased lines are unavailable due to geographical constraints (*e.g.*, mountainous terrain), and when leased lines are cost effective due to poor grade of service or lack of competition with the local exchange carrier. Need for these bands will become even more pronounced as cellular and PCS traffic levels increase and coverage areas expand. Regrettably, however, FS user access to the 10 GHz Band also is being restricted by different services. The problems caused by this lack of spectrum are being exacerbated by existing antenna standards that significantly restrict short-haul FS user penetration into urban or other densely populated areas. Modification of these standards, to permit the smaller diameter antennas proposed in the Petition, will help make the 10/11 GHz Band a more suitable option for short-haul, high capacity FS applications.

<sup>43</sup>Id., 15 FCC Rcd at 3164.

and in residential areas. Furthermore, many other countries already have adopted regulations allowing 18-inch antennas for use in the 23 GHz Band. If the Commission amended its rules to allow 18-inch antennas in this band, it would permit antenna manufacturers to design common products in domestic and foreign markets. Use of the 23 GHz Band by PCS providers and other broadband entrepreneurs would be encouraged.

Modification of the 10 GHz Band antenna standards would generate similar benefits. If 2-foot antennas are permitted in this band, rather than the 4-foot minimum diameter antennas now required, studies have shown that the 10 GHz Band would attract FS providers which do not have adequate access to the 18 GHz Band but still need paths longer than 2.3 miles.<sup>44</sup> This capacity is especially important to accommodate the increasing traffic between cell sites and switching centers.

#### **B. Permitting Smaller Antennas Will Serve the Public Interest**

Without doubt, "implementation of [the TIA Fixed Section's] suggestions would result in greater spectrum efficiency and effective use" of the 23 GHz Band and the 10 GHz Band.<sup>45</sup> Given the rapid deployment of wireless networks and the long lead time needed by manufacturers to modify their product, prompt action on these proposals is needed. Otherwise, the FS manufacturing industry would be at a significant disadvantage in selling equipment to domestic and overseas markets.

---

<sup>44</sup>Petition, App. A at Section 8.1.

<sup>45</sup>NPRM, 15 FCC Rcd at 3165.

The TIA Fixed Section's proposal to modify antenna standards in the 23 GHz and 10 GHz Bands is one more solution to encouraging efficient utilization of available spectrum without causing any detriment to other users. The record on the Petition was unanimous in support of these changes.<sup>46</sup> Thus, the Commission must adopt these proposals, as set forth in the NPRM.

### **23 GHz BAND CONDITIONAL LICENSING MUST BE PROMOTED**

Conditional licensing is necessary for increased access to, and quick deployment in, the 23 GHz Band. It would provide much needed and immediate relief for FS users. As the Commission noted in its Order permitting conditional licensing in the 10 GHz Band, "the public interest will be served by permitting microwave licensees ... to avail themselves of conditional authorization authority at the earliest opportunity ... [because it] will allow for more rapid delivery of ... microwave services to the marketplace."<sup>47</sup>

The exact same rationale applies with even greater force to the 23 GHz Band. Rapid deployment of FS paths is essential to ensure that broadband technologies reach the widest possible marketplace. Opening up the 23 GHz Band, with the channelization and operating rules proposed in the NPRM, will contribute significantly to expanding the reach of these technologies and services.

---

<sup>46</sup>See comments on the Petition filed by AirTouch at 2-3; Harris at 4; DMC at 4.

<sup>47</sup>Reorganization and Revision of Part 1, 2, 21, and 94 of the Rules to Establish a New Part 101 Governing Terrestrial Microwave Fixed Radio Services, Order, 13 FCC Rcd 4394, 4396 (Chief, WTB, and Chief, Office of Engineering and Technology, 1998).

Despite these myriad benefits, the Commission rejected 23 GHz Band conditional licensing.<sup>48</sup> This action clearly deprives the broadband market of a vital tool in fueling continued growth -- system roll-out will be delayed, network design flexibility will be impeded, and necessary expansion will be stifled. Thus, the Commission's decision must be reversed and blanket 23 GHz Band conditional licensing must be implemented.

**A. The Commission Should Permit Conditional Licensing for the Entire 23 GHz Band Using the TIA Fixed Section's Coordination Approach.**

In the Petition, the TIA Fixed Section proposed that the Commission amend its rules to allow additional conditional licensing in the 23 GHz Band. The increased opportunities for prompt access to the 23 GHz Band that would result from these proposals clearly is in the public interest and must be adopted.

In the highly competitive PCS and cellular industries, providers are under intense pressure to put their systems into operation as soon as possible to build market share and to generate the cash flow necessary to pay for infrastructure, operations, and auction costs. Conditional licensing allows these providers to go into operation immediately after the license application is submitted, at the applicant's own risk. This process supports more intensive use of the 23 GHz Band. The rights of incumbent users to protection from harmful interference is not compromised because

---

<sup>48</sup>NPRM, 15 FCC Rcd at 3158-60.



prior coordination requirements still must be satisfied before commencement of operations.

The 23 GHz Band is allocated for both government and non-government use. Applicants for Commission licenses thus must have their proposals coordinated with NTIA.<sup>49</sup> This process takes too long. Permitting conditional licensing clearly would alleviate this problem.

There are no costs associated with this proposed expansion of conditional licensing for the 23 GHz Band. However, the benefits are plentiful. Not only will the proposed change help to relieve congestion and relocation difficulties of FS operators, but it also will allow them to avoid the undue delays experienced with the application process in this band without adversely affecting government operations.

To implement 23 GHz Band conditional licensing, the TIA Fixed Section took a prudent approach. Consistent with the federal government's increased commercialization of its spectrum management policies, the TIA Fixed Section recommended that the process track how private sector coordination is conducted.<sup>50</sup> Under this approach: (i) a commercial frequency coordinator would send a prior coordination notice ("PCN") to IRAC; (ii) the affected government agencies, through

---

<sup>49</sup>The 23 GHz Band is shared with the Federal Government. Private sector use of this band must be frequency coordinated through the Frequency Assignment Subcommittee ("FAS") of NTIA's Interdepartment Radio Advisory Committee ("IRAC").

<sup>50</sup>To further protect government operations, the TIA Fixed Section also proposed establishing specific circular areas around sensitive military and agency facilities where conditional licensing would not be permitted. Petition at 13.

IRAC, would have 30 days to respond; and (iii) if no response is made, the proposal is deemed to be coordinated, an application can be filed and operation simultaneously could commence, but if interference problems are identified, they would have to be resolved before conditional licensing could be invoked.<sup>51</sup>

Inexplicably, the Commission "decline[d] to propose any [rule] changes for conditional licensing in the 23 GHz Band."<sup>52</sup> To make matters worse, it is now reluctant to move forward with this reasonable solution for accelerating FS user deployment and for making the 23 GHz Band more accessible. In fact, no evidence exists that the Commission is, in fact, rushing to work with NTIA and get its agreement on this issue. Instead of detailing any plans to further the process with NTIA, all the Commission can muster in the NPRM is a weak promise that it "will continue to work toward an agreement."<sup>53</sup>

Failing to aggressively pursue negotiations with the NTIA for 23 GHz Band conditional licensing is unacceptable. The Commission must be held accountable for its lack of progress. Avoidance of this viable option to help FS users provide essential backbone support for broadband technologies and for public safety or utility services

---

<sup>51</sup>NPRM, 15 FCC Rcd at 3158-59. This procedure works well for private sector coordination between users from the same service (e.g., both FS users) and between users sharing the band (e.g., FS and FSS users). 47 C.F.R. § 101.103 (d)(2000). Further, it works well for coordination of federal government bands between different agency coordinators before submission to NTIA and to IRAC's FAS. See Petition at 12 n.18.

<sup>52</sup>NPRM, 15 FCC Rcd at 3158-60.

<sup>53</sup>Id., 15 FCC Rcd at 3159-60.

no longer can be tolerated, especially since support for this proposal in response to the Petition was nearly unanimous.<sup>54</sup>

At a minimum, the Commission promptly must report publicly on the status of its negotiations, or lack thereof, with NTIA. A fast-track timetable must be established for the Commission to approach NTIA and commence serious discussions on this issue. Further, the Commission must provide representatives from the FS industry, from NSMA and other frequency coordinators, and from all remaining affected constituencies the opportunity to participate in these negotiations.

**B. Until Blanket 23 GHz Band Conditional Licensing Is Permitted, It Should Be Allowed On All Frequencies If the ERP Is Not Above 55 dBm.**

Conditional licensing in the 23 GHz Band is permitted but only on an unjustifiably limited basis. The Commission has determined that such licensing should be permissible only on the four (4) low power frequencies listed in Section 101.147(s) and only if the FS user would not operate with an ERP<sup>55</sup> greater than 55 dBm pursuant to Section 101.147(s).<sup>56</sup>

Nevertheless In the NPRM, due to apparent uncertainty among applicants "whether conditional operation is [permitted] anywhere in the 21.2-23.6 GHz band,

---

<sup>54</sup>See, e.g., comments filed on the Petition by DMC at 3-6; Harris at 3-6.

<sup>55</sup>The Commission appropriately proposes correcting its rules so that the maximum power standard is stated as EIRP, not ERP. NPRM, 15 FCC Rcd at 3163.

<sup>56</sup>See NPRM, 15 FCC Rcd at 3152-53. The Chief of the Commission's Licensing and Technical Analysis Branch, Public Safety and Private Wireless Division ("Microwave Section"), has taken this position, in a July 13, 1999, letter to the TIA Fixed Section (Ref. No. PS & PWD-LTAB-655).

or only on the four frequencies listed in Section 101.147(s) ... [the Commission proposes amending] Section 101.31(b)(vii) to clarify that only the four frequencies listed in Section 101.147(s) are allocated for conditional operation."<sup>57</sup>

Alcatel disagrees with the Commission's interpretation. First, it is inconsistent with the specific text of Section 101.31(b). Second, imposing this arbitrary limit on the use of conditional licensing, so that it is available only to 23 GHz Band low-power channels, unnecessarily restricts access by FS users.

By proposing to clarify that the scope of 23 GHz Band conditional licensing is limited to low power, private carrier operation, the Commission, in the NPRM, is not following the strict terms of Section 101.31(b). Specifically, Section 101.31(b)(1)(vii) of the Commission's Rules provides that

[a]n applicant for a new point-to-point microwave radio stations(s) or a modification of an existing station(s) in the . . . [23 GHz] band[] . . . may operate the proposed station(s) during the pendency of its applications(s) [sic] . . . if the applicant certifies that the following conditions are satisfied: . . . (vii) The filed application(s) does not propose to operate in the [23 GHz] band with an E.R.P. greater than 55 dBm pursuant to § 101.47(s).<sup>58</sup>

The Commission's policy of restricting conditional licensing in the 23 GHz Band only to the four (4) low power channel pairs assigned under Section 101.147(s),

---

<sup>57</sup>NPRM, 15 FCC Rcd at 3152-53. In a July 13, 1999, letter to the TIA Fixed Section from the Chief, Public Safety and Private Wireless Division, WTB (Ref. 2000F/KHF), this issue was deferred for public comment as part of the NPRM. Moreover, the Commission made it clear that, "[w]ith regard to other frequencies in the band, applicants must follow normal processing and await the Commission obtaining clearance from NTIA before operating." NPRM, 15 FCC Rcd at 3152-53.

<sup>58</sup>47 C.F.R. § 101.31(b)(1)(vii) (2000) (emphasis added).

however, is unnecessary and is not contemplated under Part 101. Indeed, Part 101 does not expressly prohibit an applicant, which proposes operation on any 23 GHz Band channel pair with an ERP at or below 55 dBm, from electing to use conditional licensing.

In the Part 101 Order, the Commission stated that it only would prohibit 23 GHz Band conditional licensing "for operations with an [ERP] greater than 55 dBm."<sup>59</sup> Under Section 101.31(b), 23 GHz Band conditional licensing is authorized upon application filing if the applicant certifies that certain conditions are satisfied.<sup>60</sup> One of these conditions is, if the applicant proposes a low power, limited coverage system, it must demonstrate compliance with the ERP requirement of Section 101.147(s).<sup>61</sup>

Conversely, there is no provision in Section 101.31(b) that expressly prohibits conditional licensing on the other 23 GHz Band frequencies designated for FS users if the 55 dBm ERP limit is not exceeded. If the applicant proposes 23 GHz Band operations other than the low power, limited coverage private carrier systems, there is no requirement that it must comply with Section 101.147(s) to be eligible for conditional licensing. As set forth in the Part 101 Order, however, the proposed system still cannot exceed 55 dBm ERP.

---

<sup>59</sup>Part 101 Order, 11 FCC Rcd at 13462-63.

<sup>60</sup>47 C.F.R. § 101.31(b) (2000).

<sup>61</sup>47 C.F.R. § 101.31(b)(1)(vii) (2000).